

LISTING OF THE CLAIMS

A detailed listing of all claims in the application is presented below. This listing of claims replaces all prior versions and listings of the claims in the application. All claims currently amended are submitted with markings to indicate the changes relative to the immediate prior version of the claims. The changes in any amended claim are shown by strikethrough or double bracketing (for deleted matter) or underlining (for added matter).

Listing of Claims:

1 - 39. (Canceled)

40. (Currently amended) A fluorescent silica-based nanoparticle comprising:

- (a) a silica-based core comprising;
~~and an~~ an organic functional group wherein the organic functional group comprising comprises a mercapto substituent; and
an organic fluorescent compound ~~positioned within~~ throughout the silica-based core; and
- (b) a silica shell surrounding at least a portion of the core, wherein the fluorescent silica-based nanoparticle has a diameter of 70 nm or less and is conjugated to a ligand.

41-44. (Canceled)

45. (Previously presented) The fluorescent silica-based nanoparticle of claim 40, wherein the diameter is 50 nm or less.

46. (Currently amended) The fluorescent silica-based nanoparticle of claim 40, wherein the ligand comprises at least one of a protein, a peptide, a biopolymer, a synthetic polymer, or an oligopeptide.

47. (Currently amended) The fluorescent silica-based nanoparticle of claim 40, wherein the ligand is conjugated to the nanoparticle by a coupling agent comprising at least one carbon-containing linkage, the carbon-containing linkage selected from the group comprising an ester linkage, a thioester linkage, an amide linkage, a sulfate ester linkage and combinations thereof linkage, wherein the linkage is an ester, an amide, a thioester or a sulfate ester linkage.

48. (Previously presented) The fluorescent silica-based nanoparticle of claim 40, wherein the silica shell covers from about 10 percent to about 100 percent of the surface area of the core.

49. (Previously presented) The fluorescent silica-based nanoparticle of claim 40, wherein the silica-based core further comprises a silica-based network, wherein the fluorescent compound is covalently attached to the silica-based network.

50. (Previously presented) The fluorescent silica-based nanoparticle of claim 40, wherein the fluorescent quantum yield of the fluorescent organic dye in the nanoparticle is about two-fold to about three-fold greater than the fluorescent quantum yield of the same fluorescent organic dye free in aqueous solution.

51. (Previously presented) The fluorescent silica-based nanoparticle of claim 40, the mercapto substituent is bonded to a maleimide.

52. (Previously presented) The fluorescent silica-based nanoparticle of claim 40, wherein the silica-based core has a radius between about 1.6 nm and about 3.5 nm.

53. (Previously presented) The fluorescent silica-based nanoparticle of claim 40, wherein the silica-based core has a radius between about 2.2 nm and about 2.9 nm.

54. (New) The fluorescent silica-based nanoparticle of claim 40, comprising a therapeutic agent, wherein the therapeutic agent is associated with the ligand.